LOTS More Sase's on File

WESTERN UPDATE #72

THE WESTERN NEWSLETTER FOR MF, LF, AND VLF EXPERIMENTERS

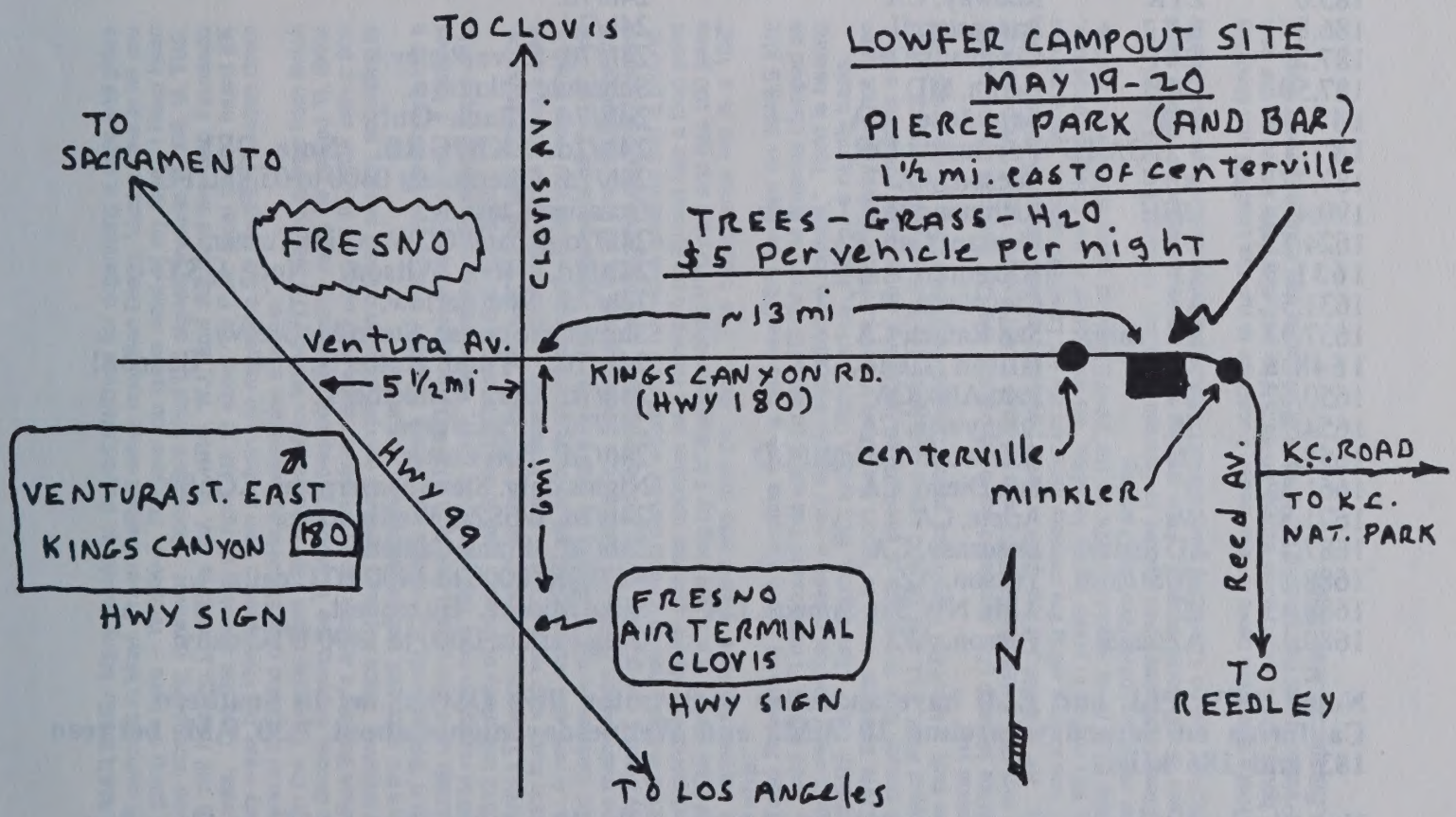
Available for business-size 25 cent SASE's, plus $1 per issue (or $10 per year)
from: Jim Ericson, 226 Charles St., Sunnyvale, CA 94086-6063

ATTENTION!! LowFER/MedFER CAMPOUT MAY 19th and 20th NEAR FRESNO, CA. SEE YOU THERE!

Boyd Skillin, Dave Johnson, Cliff Buttschardt and several other California LowFERS are planning an impromptu campout May 19th and 20th in a park on the Kings River near Fresno. Everyone is invited, and it should be a fun opportunity to talk with other experimenters! Several people are bringing battery-operated stations, so be sure your beacon is on the air that weekend.

The map is self explanatory. Space is reserved for us and the cost is $5 per vehicle per night. Boyd reports that Pierce park is fairly remote, and that there are trees and grass. Facilities include an outhouse, plenty of water, but don't count on electricity. Bring batteries, flashlights, and lanterns! Everyone is on their own for meals but by all means, organize gourmet meals among yourselves if you like! There is a nearby "mini-mart", but the nearest full service market is in Reedley, about 8 miles away. It's ok to arrive Friday night, but most of us plan on Saturday morning arrival. We may have HF capability, so If you can't make the campout, try to find us after 6 P.M. Saturday night on 3952 kHz (the Western Public Service System traffic net).

Plan now to break free May 19th and join us! If you need further details, telephone Boyd Skillin, Cliff Buttschardt, or myself. See you there!



ACTIVE EXPERIMENTAL BEACON STATUS (LIST COMPILED APRIL 19, 1990)

FREQ(kHz)	IDENT	LOCATION	SCHEDULE INFORMATION
166.503	C	Near Morro Bay, CA	24h/7d.
169.94	NRE	San Diego, CA	24h/7d.
171.139	K	Mountain View, CA	Unknown.
175.703	FAW	Orem, UT	24h/7d.
176.26	CO	Glenwood Springs, CO	24h/7d.
176.85	7FS	Belfair, WA	24h/7d.
177.75	CT	Pleasant Gap, PA	10 baud BPSK. Status unknown.
178.62	DJ	Los Banos, CA	24h/7d. Dave Johnson.
179.54	WJ	Arleta, CA	On, but intermittent.
180.224	F	Los Banos, CA	FSK. By request.
181.17	IZJ	San Gabriel, CA	Daily. Silent 0700 to 1100 UTC.
182.672	G	Palo Alto, CA	24h/7d.
182.88	H2	Descanso, CA	24h/7d.
183.160	PRK	Saratoga, CA	24h/7d. K6PRK.
183.544	MEL	San Jose, CA	24h/7d.
183.74	ZI	San Jose, CA	24h/7d. Frank Butscher W6SZS.
184.016	EK(daid)	Sunnyvale, CA	24h/7d.
184.383	TI	Kingman, AZ	24h/7d.
184.39	HO	Pahoa, HI	By request (Sheldon Remington).
184.46	MGX	Fresno, CA	24h/7d. Boyd Skillin. Note new Ident.
184.5	TEXAS	NW of Ft. Worth, TX	24h/7d.
185.0	ZYK	Redway, CA	24h/7d.
186.84	BA	Lancaster, IL	24h/7d.
187.2	CAT	Cincinatti, OH	24h/7d. Dave Raney.
187.50	DCH	Berlin, MD	Schedule unknown.
187.59	**SM**	**San Jose, CA**	**24h/7d. Back On!**
187.7	**3 GOATS**	**Portland, OR**	**24h/7d. KB7GRB. Note QSY.**
187.77	AZ	Tucson, AZ	24h/7d. Often silent 0400 to 0530 UTC.
190.4	OHH	Richmond Hill, Canada	Occasional testing.
1624.75	CT	Pleasant Gap, PA	24h/7d. 5 baud CCW. Clint Turner.
1631.5	**TI**	**Kingman AZ**	**24h/7d. Rex Wilson. Note QSY.**
1631.54	A	Cleveland, N.C.	24h/7d. Ron Barlow.
1637.93	RR (daid)	San Rafael, CA	Sunset to Sunrise. Steve McGreevy.
1648.5	**ABC**	**Hilton Head, S.C.**	**24h/7d. Todd Roberts. New Beacon!**
1650.62	G4	Palo Alto, CA	24h/7d. Herb Vanderbeek.
1654.7	EK	Sunnyvale, CA	24h/7d. Jim Ericson.
1655.2	CO	Glenwood Springs, CO	24h/7d. Bob Cutter.
1661.35	U	San Diego, CA	Nights only. Steve Meyerpeter, KG6BY
1671.8	WJ	Arleta, CA	24h/7d. W6SZQ Wallie Jones.
1687.4	SD (daid)	Descanso, CA	24h/7d . Frank Cathell.
1688.2	TUS(daid)	Tucson, AZ	KD7QK. 0000 to 1400 UTC daily.
1688.45	Z2	9 Mi. NW San Simeon, CA	Mike Mideke. By request.
1689.1	AZ(daid)	Tucson, AZ	Greg Farkas. 0000 to 1400 UTC daily.

Note: FPV, PLI, and ELU have an active SSB/Amtor (live QSO's) net in Southern California on Saturdays around 10 A.M., and Wednesday nights about 7:30 P.M. between 183 and 186 kHz.

Non-Western listings are beacons currently being copied in the West, or they have SASE's on file with us.
Bold entries indicate recent changes, or new beacons. (daid) = dash after ident.

EK NOTES/MAILBAG: Many thanks to **Boyd/Cliff/Dave** for organizing a date and place for a LowFER campout in May! **Frank Cathell** writes from San Diego, "Just a note to let you know what's going on here -- WORK--! The new job takes most of my time. I have been getting in some monitoring, however. Consistent MedFER signals include **TI, RR, U, TUS, and AZ.** I'm still hearing LowFERs **IZJ, C, NRE, WJ, and AZ,** and the San Fernando Valley SSB nets. One the evening of April 4th at about 10 P.M. local time, I heard **EK** MedFER...very weak but identifiable. I am planning to move the **SD** MedFER beacon down to the lower end of the band near 520 kHz sometime this summer."

On the Thursday, April 12th ham net, **Rex Wilson (TI)** played a tape from **Brice Anderson** in Illinois, copying the **TI** MedFER beacon! The same night he copied TI, Brice also copied **Ron Barlow's A** from North Carolina. Brice was using an IC-720A with a 600 foot longwire antenna. Brice hopes to have his own MF beacon on next season, according to Rex. Rex says the strongest station he receives now is **WJ.**

Cliff Buttschardt (C) reports from Morro Bay, CA that Grove Electronics has a good price ($196) on a four-pound Sangean ATS-803A portable AC/DC receiver. It features AM/SSB/CW/FM reception from 150 kHz to 30 MHz. Cliff says this radio seems superior to the Uniden 2010 that many of us use. Call Grove toll-free at 1-800-438-8155.

Arliss Thompson writes to let us know that, "**XU** is off the air until further notice. I have been too busy with work to get in any LF listening -- unfortunate, since I have a quiet location here. A new and improved XU will be back on this summer. I'll let you know when."

Ed Gelinas wrote to inform us that his 525 kHz **T** beacon is off the air. He explains, "The main reason is that I'm putting up a helical vertical for 40 thru 160 Meters and that is the only place it can go, due to real estate limitations. One thing that may be of interest to the MedFERS is that a helical vertical can be wound as a halfwave antenna that is ground-resistance independent. My HF antenna operates as a halfwave on 40 and has a feed point impedance of 200k ohms. It is 8 feet long by 4.5" diameter white PVC pipe and has 100 turns of 3/8" wide copper foil tape wound one turn per inch. The capacitance hat is a 102" stainless CB whip."

Todd Roberts of South Carolina has a new MedFER beacon on 1648.5 kHz (see listing). Todd writes, "I have found that using an old VHF TV or FM antenna clamped on the top of my 3-meter vertical makes a very simple and effective tophat! " Todd is hearing eastern MedFERS DAW (**Jim Young, SC**) and **A (Ron Barlow, NC)** on a nightly basis.

Chris Spencer wrote to report that Utah Valley LowFER activity has not been big this past season due to periods of interference, including some nasty powerline arcing. Chris has heard **PRK, PLI and TI,** and notes that MedFER **TI** is extremely strong. Chris says, "I have built a MedFER transmitter using a Signetics 74AC11241 as the output, but have no antenna yet."

Mike Mideke (Z2) reminded us to encourage live CW contacts on the bands! Live activity includes **Keith Olson (7FS)** who works **3 GOATS** using taped CW on almost a daily basis. He' even had a live QSO or two! I continue to pass personal traffic to Mike Mideke from time to time using the memory keyer on my **EK** LowFER beacon. Being without a telephone, this comes in pretty handy for Mike. As mentioned in our listing on page two, **FPV, PLI, and ELU** have regular QSO's on the LowFER band using SSB/Amtor modes. Please inform me of any other "live" QSO activity.

Steve McGreevy has moved to Georgia for a few months, but his listed San Rafael address is still good for mail. He's starting to do some dx-ing -- he reports good whistler reception, but no LowFERS yet! Steve: Write us a letter and tell us what you're doing!

That's about the news for this issue! I continue to run the LowFER and MedFER beacons 24 hours, chart record solar activity on 48.5 kHz, and stay fairly active on the ham nets. Work-related travel has taken a big bite out of available free time, however. <u>Hope to see you in Fresno on May 19th!</u>

----NEWS BULLETIN------

GWIN

GROUND WAVE INSURGENCY NERDWORK

Providing America with an intellectually stimulating (though hopeless) alternative to yer good-buddy trucker CB'ers with their thousand-watt linears .....during those critical minutes <u>before</u> nuclear wipeout.

17 March 1990-- The San Joaquin Bellydraggin' Society held its first annual St. Patrick's Day Lowfer Party at the DJ node of the Central California Groundwave Insurgency Nerdwork, located in Los Banos, Calif. In attendance were Boyd Skillin MGX of Fresno, Dave Johnson DJ of Los Banos, and honorary member Mitch Lee of San Jose. (We always want to have at least one honorary member on hand to serve as Sergeant-at-Arms and Designated Driver in case the regular members get too drunk & rowdy.) We started off the day by driving out to a lonely spot near El Nido away from any power lines (it would make a good "lovers' lane" but you know Lowfers don't know about such stuff)....tried to hear Boyd's MGX beacon which is usually weak but copyable here, but alas too much QRN from big storms in the southeastern U.S. Did copy PRK, C, MEL, EK, ZI, and DJ. Dave fired up a new direct conversion longwave receiver just completed the day prior: verdict good but not great, will publish plans. Now on loan to Boyd to help him get his antenna and audio up and running. Mitch tuned through the LF-VLF region on his (mobile) rig and gave us a listen to LORAN, WWVB, ALPHA, etc. We then regrouped at the DJ Node for lunch (Filipino delicacies cooked by Dave's wife Connie) and several hours of discussion, stories, tall tales, but no outright lies. Mitch gave an excellent sales pitch on Fair Radio's 2 MHz crystal oscillator frequency reference, #EROS-800-WCW1, only $13. Boyd, a licensed but inactive ham, talked about getting back into amateur radio especially to join in the Lowfer nets. Dave proposed a design for a "Beacon Grabber", a system that you can tack onto a longwave receiver that will enable it to identify the presence of a repeating ident under conditions to poor to actually hear the ident by ear. ....Several people who originally planned to attend were not able to make it, and we plan to have another Lowfer Party in a few months on a date where others will be able to attend. ---D.J.

MAY 19!

See you at the FRESNO "CAMPOUT"!
ed.

SPECTRUM OCCUPANCY - 1602 to 1705 KHZ

By
Michael Mideke

When the FCC allocated the 1610-1710 kHz segment to broadcasting the Part 15 privileges obtaining from 510 through 1610 kHz were automatically extended to cover the new segment. In the interval between legislative action and occupancy by broadcast stations, Part 15 experimenters have enjoyed remarkable propagation in a relatively interference-free band.

But as any Medfer or MF DXer will attest, the freedom from interference is only relative. Worldwide, several services occupy the frequency segment. Some of these signals generate confusion for listeners seeking Medfers. Many of the same signals are fascinating DX targets in their own right, and most of them will become forever inaccessible once North American broadcasting gets under way. The following guide should alleviate confusion while perhaps helping listeners to find some interesting DX targets.

CW SIGNALS- Aside from Medfers, two types of CW signal are commonly heard: NDBs and driftnet locators. The following NDBs have been reported during 1989-90. (Listed frequencies are for nominal carrier frequency.)

1615	OR	New Zealand
1620	SBT	Unidentified, probably Latin America
1640	TM	New Zealand (USB only)
1685	MER	Colombia (DSB, unusually high-pitched modulation.)

The following NDBs were last reported in 1988, but may still be on the air:

1615	NZ	Papua New Guinea
1662	KUB	Papua New Guinea
1689	MH	Papua New Guinea
1692	KIU	Papua New Guinea

The following NDBs have not been reported since 1985-86:

1623	GNY	Papua New Guinea
1625	PAT	Ecuador (Probably moved to LF.)
1632	OKT	Papua New Guinea
1675	TSL	Papua New Guinea

In addition, occasional short-term NDB operations have been traced to military bases in the US.

DRIFTNET LOCATORS- Far more numerous and confusing are the "number letter" beacons such as Z239, L450, X93, etc. These are position markers for the enormous floating fish traps known as driftnets. At times, Hawaiian listeners have reported the band completely filled with multiple layers of these beacons- a rather awesome indication of the number of driftnets operating in the Pacific. Fortunately, most of these beacons conserve battery power by interspersing each round of identification with a relatively long silent period. When it comes to listening through them for continuously operating beacons, the interference is not nearly as bad is it might be.

RADIONAVIGATION- Medfers and Radio Amateurs are familiar with the powerful, semi-musical signals sending endless "Tweedle Bleep" patterns. These are elements of a precision military navigation system known as LORAC (for LOng Range ACcuracy). By the time domestic broadcasts appear in the 1610-1705 kHz segment, we can expect the remaining LORACs to have moved into the 1900-2000 kHz segment, where several already share spectrum with Radio Amateur activities.

BROADCAST- Outside of North America, a number of AM broadcast outlets have been active for many years. In the US, 1610 has been occupied by an increasing number of Travelers' Information Service stations. (These are supposed to move to 530 ahead of commercial broadcast expansion.) In most of the rest of the world, the top of the commercial broadcast band is 1602 kHz, and a large number of 10kw stations occupy the channel.

NON-US BROADCASTS ABOVE 1602 kHz-

1610	Chile (35 or maybe 100 w)
1610	Anguilla- 50 kw
1620	3 Australians, all 500 w. (a special "radio for the print-handicapped" service.)
1621	Italy, 1 kw
1629	2 more Australians, 500w, "print handicapped" service.
1656	TAFE RADIO, Australia Gulf Coast, power, purpose and content unknown.
1700	Taiwan- Fishing and weather announcements.
1720	VL2UV- Australia, broadcast link, 500 w

CORDLESS TELEPHONES- FM transmissions from early vintage cordless telephones are still heard in surprising numbers above about 1650 kHz. Like Medfers, these things get out pretty well as nighttime skywave but as weak, broad signals, they are rarely copyable. If you have a few in the neighborhood, its another story!

INCIDENTAL AND SPURIOUS- Harmonics of VLF MSK transmissions and AM broadcast stations have been noted. Harmonics of malfunctioning LF NDBs are a distinct possibility. At some urban sites, rectification of intense, interacting AM broadcast fields makes the band useless for weak signal work. Receiver overload can produce similar symptoms, but in this case a cure can usually be produced by the receiver operator.

THANKS TO- Sheldon Remington for NDB information. Sheldon Remington and THE WORLD RADIO TV HANDBOOK for broadcast information. Dick Dillman, N6VS and The Freedom of Information Act for explaining LORAC.

THE AERO/MARINE BEACON GUIDE by Joe Woodlock and Ken Stryker, 1990 edition, lists 46 NDBs between 1600 and 1700 kHz- I have only mentioned those that listeners have reported hearing since 1985. THE BEACON GUIDE provides more detailed information on these and several thousand LF NDBs.

LF/VLF BBS

For those interested in longwave radio (below 550 KHz), there is now a computer bulletin board devoted to this topic. It is ...

---- The LongWave DataBase System (LWDBS) ----
PO Box 10116, Arlington, VA 22210
Phone: 703-528-7753
Speed: 300/1200/2400 baud
Schedule: 24 hrs/day, 7 days/week.
Sysop: Lynn C. Ashley, Jr.
LWDBS is PC Pursuitable via the DCWAS pathway.

Anyone with an interest in longwave radio is invited to call. This includes non-directional beacons, LowFERS, LORAN & Omega, etc. This board is for *long* wave interests only. --Pat Harrington jph@astro.umd.edu
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Reprinted from Speleonics #14 (Feb., 1990)

Thanks to Frank Reid (W9MKV) for sending this in. Frank is editor of a newsletter for low-frequency cave-radio experimenters called SPELEONICS. They publish four times a year, and the cost is $4/year. Subscriptions go to Joe Giddens, PO 891, Camden, AK 71701. (ed.)

SCIENTIFIC AMERICAN March 1990

Broadcast Warning

Did radio waves portend the Loma Prieta quake?

One of the most troubling aspects of the Loma Prieta earthquake, which rocked the San Francisco Bay Area last October, was its lack of premonitory tremors. In vain geologists have scoured seismic data recorded before the quake for signs of warning. Yet the quake may have signaled its coming in another way—with a radio broadcast. Geologists say the serendipitous finding, if confirmed, may help them achieve a long-sought goal: short-term prediction of earthquakes.

The radio signals were discovered by a group of electrical engineers led by Antony C. Fraser-Smith of Stanford University. For years he has explored the potential of very-low-frequency (VLF) radio waves as a communications medium for submarines. VLF radio waves oscillate at less than 30,000 cycles per second, or hertz. Although conventional radio waves (such as the AM variety, which vibrate at about a million hertz) can carry more data, VLF waves pass more readily through water—and the earth.

Since 1987, in an effort to survey background noise that might affect VLF communications, the Stanford team has monitored radio waves ranging from .01 to 10 hertz. This ultra-low-frequency (ULF) margin of the VLF band has been largely neglected by other scientists, according to Fraser-Smith. He and his colleagues originally installed their antenna, a metal cylinder wrapped in wire, on the Stanford campus. Then they moved the device to Corralitos, a small town where electromagnetic emissions from cars and a mass-transit rail system would not distort the readings. Corralitos is only four miles from the epicenter of the Loma Prieta earthquake.

The quake damaged data-storage equipment at the Corralitos site, but after some delay Fraser-Smith and a graduate student, Arman Bernardi, finally retrieved the data. They immediately noticed that the amplitude of the .01-hertz signals had increased dramatically about three hours before the quake. The effect persisted until the quake cut off power to the computer recording the data. The researchers checked for signs of equipment malfunction but, somewhat to their surprise, found none.

What caused the signals? Fraser-Smith speculates that increased stress on rocks along the fault line generated a surge of piezoelectricity, or pressure-induced current, that in turn produced radio waves. Another possibility, he says, is that prequake activity altered the flow of preexisting electric currents in the earth. (Such currents are a normal by-product of electromagnetic effects in the atmosphere.) The fact that only the lowest-frequency (.01-hertz) radio waves were detected implies that the prequake activity occurred well beneath the surface.

Experts on earthquakes have reacted to the Stanford group's finding with a mixture of excitement and caution. Allan G. Lindh of the U.S. Geological Survey in Menlo Park says that after 20 years of investigating claims of surefire earthquake precursors, he is inclined toward skepticism. "But I can't find a crack in their arguments," he says, "and no one else can either."

Malcolm J. Johnston of the USGS points out that the geologic literature is full of "hints" that earthquakes may be linked to electromagnetic activity. Japanese and Soviet scientists claim to have detected strong VLF signals before and during quakes. Witnesses have also recalled lightninglike flashes emanating from the earth during quakes and poor radio reception beforehand. Johnston adds, however, that it is difficult to imagine a mechanism that could induce powerful electric currents within the earth without any simultaneous seismic activity.

Johnston and Lindh agree that only further observations will establish whether ULF signals have predictive potential. With the encouragement of the USGS, Fraser-Smith is seeking federal funds for more ULF antennas for earthquake monitoring. A likely location is Parkfield, a town on the San Andreas fault where geologists expect a magnitude-6 earthquake to strike soon.

Fraser-Smith suspects that only large quakes produce detectable signals. His equipment, he notes, did not record signals before or during a magnitude-5 quake near Corralitos this past August; the magnitude-7.1 Loma Prieta quake was more than 100 times stronger. He hopes that even if ULF radio waves do not prove to be reliable earthquake predictors, they may still provide scientists with a new source of information about these destructive events. —*J.H.*

THE AERO/MARINE BEACON GUIDE

An up-to-date listing of more than 7000 aeronautical and marine beacons from the western hemisphere, Pacific Ocean and Asia, representing just about all the beacons that may be heard in the United States (including Hawaii and Alaska).

Extensive research was conducted to get maximum information about each of these more than 7000 individual beacons. Each entry contains considerable information, a composite of data drawn from many sources and verified from other sources. The data include:

Frequency - From 191 to 535 kHz and 1600 to 1745 kHz
ID - The 1 to 4 letters/numbers used to identify the beacon

Country - More than 100 countries included
State - States, provinces, departments, islands within 30 countries

Location - Location name plus other pertinent data such as airport name chart name, company name for oil rigs and navigation season only indication for marine beacons

Special - Sequence for marine beacons, operating hours where less than 24 hour operation, identification of military bases, other government affiliation, private beacons

Coordinates - Rounded to the nearest minute (as are many sources of this information). Movable beacons are so indicated,

Power - Shown in watts for all beacons

There is a CROSS INDEX of ID to frequency, with easy identification to indicate which are in the North America section and which are in the "Foreign" section. And a Morse Code chart that includes the Morse Code for those Russian letters which are in addtion to the normal 26 letter codes. There is also a list of ID's and frequencies of known operating lowfers. Locations are shown by city and state to help in identification.

The guide is designed in loose-leaf form to make future updating simple.

If you are a listener, the Aero/Marine Beacon Guide provides you with just about all you need to identify those beacons you hear. If you are also a computer buff, the guide gives you all you need to compute bearings and distances from your location. Even if you don't have a computer, the coordinates and power will help you figure your chances of hearing a particular beacon.

The Aero/Marine Beacon Guide is available by mail for US$15 postpaid in North America. Overseas buyers provide addtional funds for surface or Airmail as required for your area.

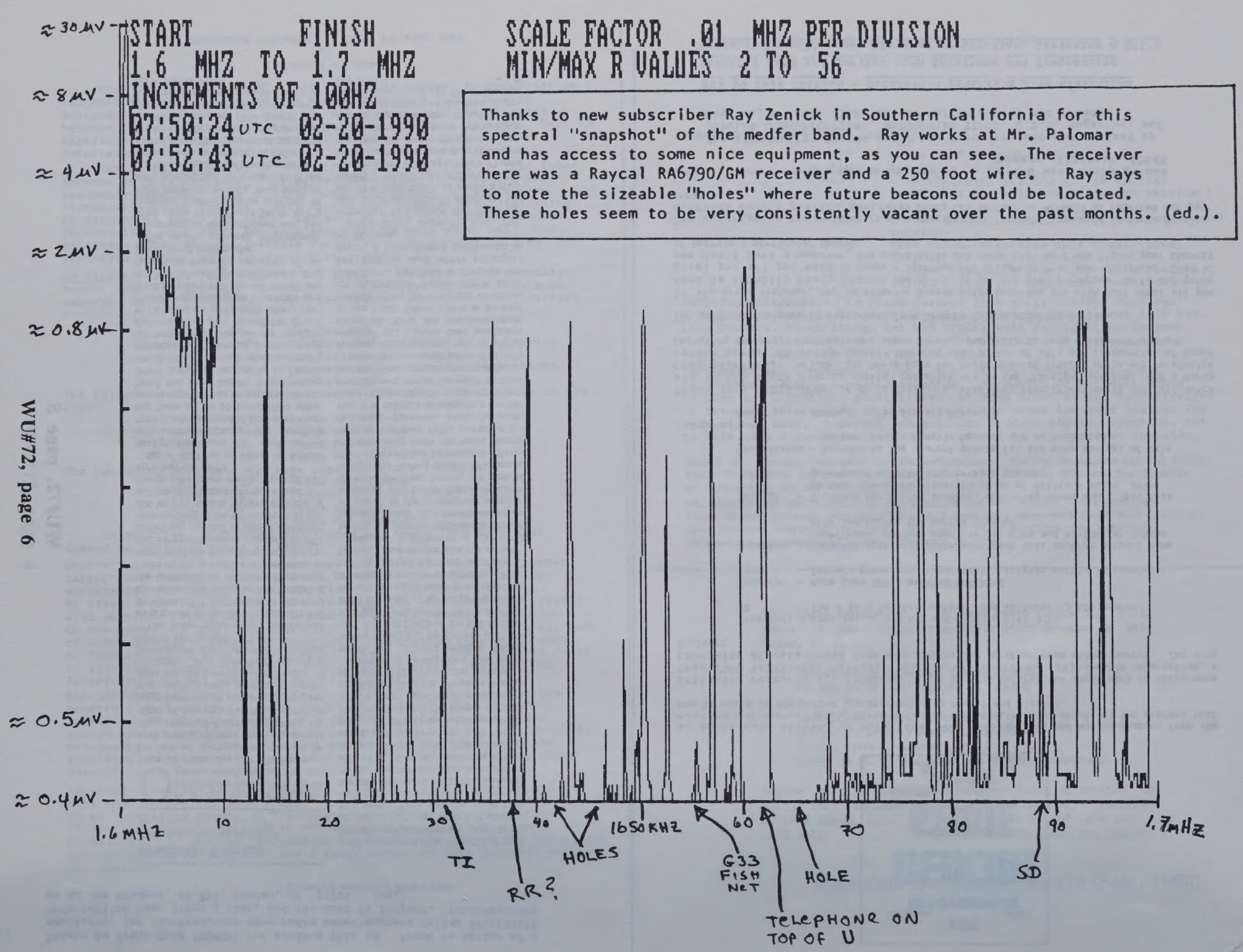
Send all checks or money orders to Ken Stryker, 2856-G West Touhy Avenue Chicago, Illinois 60645

The AERO/MARINE BEACON GUIDE has been reviewed and praised by POPULAR COMMUNICATIONS, MONITORING TIMES, Q.S.T. Magazine, and most major radio clubs in the United States and Canada.

NEW TO THIS EDITION - Modulation pitches & site elevations

Detailed GWEN Information with locations and frequencies

Articles by well known DXers on propagation, listening & QSL's



Thanks to new subscriber Ray Zenick in Southern California for this spectral "snapshot" of the medfer band. Ray works at Mr. Palomar and has access to some nice equipment, as you can see. The receiver here was a Raycal RA6790/GM receiver and a 250 foot wire. Ray says to note the sizeable "holes" where future beacons could be located. These holes seem to be very consistently vacant over the past months. (ed.).

WESTERN UPDATE ACTIVE LIST as of April 19, 1990

Aldrich	Daniel			8030 Petit Verdot Court	Sacramento	CA	95829	
Anderson	Brice	BA	W9PNE	PO Box 14	Lancaster	IL	62855	(618)299-2441
Armstrong	Lloyd			3813 Lancaster Drive	Pueblo	CO	81005-3065	
Ashley	Lynn			2401 N. Vernon St.	Arlington	VA	22207	(703)522-5308
Bahr	Leland	LEE	W0VT	914 Golden Bear Lane	Kingwood	TX	77339-2914	(713)359-5284
Baker	Brad			21024 Bear Creek Road	Los Gatos	CA	95030	
Balfour	Herb	OHH	VE3OHH	91 Elgin Mills Road West	Richmond Hill (Canada)	ONT	L4C4M1	(416)884-5355
Barlow	Ron	A	N4GJV	14245 Cool Springs Road	Cleveland	NC	27013	
Bauer	Frank	FB	W6FPO	PO Box 1086	Felton	CA	95018	(408)335-7392
Bittner	Mike			27215 Sunnyridge Road	Palos Verdes	CA	90274	
Bond	Robert		WD6BCN	1420 McLoughlin Avenue	Oxnard	CA	93035	(805)985-0159
Borglum	James			5549 Lesa Road	La Mesa	CA	92041	(619)464-3250
Bowers	William			Rt. 3, Box 177 AC	Chandler	OK	74834	(916)377-4237
Bradley	Dave		W6CUB	PO Box 2043	Freedom	CA	95019-2043	
Bumpus	Carle			930 Idylberry Road	San Rafael	CA	94903	
Burhans	Ralph			161 Grosvenor Street	Athens	OH	45701	(614)593-8207
Burr	David			505 Mackenzie Drive	Lima	OH	45805	
Buttschardt	Cliff	HDO, C	W6HDO	950 Pacific Street	Morro Bay	CA	93442-2327	(805)772-2132
Carter	Max	MAX		46 - 14th Street	Wheatland	WY	82201	(307)322-9439
Cathell	Frank	H2, SD	K3YAZ	PO Box 535	Descanso	CA	92016	(619)445-8167
Chalmers	Doug			450 Adobe Place	Palo Alto	CA	94306	
Chaplin	Carl		W7Q0	Box 2800	Minden	NV	89423	
Chappell	Vernon			4511 - 36th Street #6	San Diego	CA	92116	
Coote	James	J	WB6AAM	808 North Ave. 66	Los Angeles	CA	90042	(213)258-7490
Cornell	Ken		W2IMB	225 Baltimore Avenue	Pt. Pleasant Beach	NJ	08742	
Costa	Bob		KB6QXM	P.O. Box 600	Redwood Estates	CA	95044	(408)353-3656
Cripe	David			7908 Wellesley Court	Pasadena	MD	21122	
Curry	David	PLI	WD4PLI	852 N. Lima Street	Burbank	CA	91505	(818)846-0617
Cutter	Robert	CO	KIØG	701 19th Street	Glenwood Springs	CO	81601	
DeVaughn	Bob	NBD	K3NBD	829 Estella Street	Pittsburgh	PA	15210	(412)488-1479
Dorman	Mike			15635 21st Ave. SW	Seattle	WA	98166	(206)246-3796
Edwards	Bill			PO 1229	Cowpens	SC	29330	
Egleston	Allan			20601 Resort Road	Sonora	CA	95370	(209)532-7111
Ericson	Jim	EK	KG6EK	226 Charles Street	Sunnyvale	CA	94086-6063	(408)773-8947
Farkas	Greg	AZ	AK7Y	PO Box 17074	Tucson	AZ	85731-7074	(602)749-4796
Farnsworth	Charles			506 Rutledge Drive	Lodi	CA	95240	
Faulkner	Charles	FPV	W6FPV	15844 McKeever	Granada Hills	CA	91344	(818)366-6210
Fisher	Montie		WA5TSL	808 Brett Drive	Edmond	OK	73013	
Fornek	Stan		K9IXC	640A Rance Road	Oswego	IL	60543	
Gelinas	Ed	T (dashes)	WA6AJY	557 N. Bayview	Sunnyvale	CA	94086	
Gosenca	Michael			203 Cherry St.	Eaton Rapids	MI	48827	
Grater	Jim			1136 S. Johnson St.	Lakewood	CO	80226-5113	
Griffith	Anthony			117 White St.	McMinnville	TN	37110	
Hedspeth	Scott	N3S	WB4YZA	Route 4, Box 227	Mocksville	NC	27028	(704)284-4021
Helms	Bernard			4210-1 Walnut	Berrien Springs	MI	49103	
Herr	George			6690 Vista Del Mar #1	Playa Del Rey	CA	90293	
Holland	David	DCH	K3YAY	300 South Main Street	Berlin	MD	21811	
Hooper	William		KF6AR	366 S. El Monte Road	Los Altos	CA	94022	
Hoopes	John			1084-B Sergeants Drive	Robins AFB	GA	31098	
Johnson	Dave		WA4NID	PO Box 389	Gainesville	FL	32602	
Johnson	Dave	F, DJ		713 Texas Ave.	Los Banos	CA	93635	(209)826-0841
Johnson	Don	AU	W9TIF	3304 Roxford	Champaign	IL	61821	(217)398-4020
Jones	Ron		K7RJ	9241 S. Toni Lee Circle	West Jordan	UT	84088	(801)561-2685
Jones	Wallie	WJ	W6SZQ	9090 Nagle Ave.	Arleta	CA	91331	(818)892-0552
Kassel	Charles			114 Church Drive	Mastic Beach	NY	11951	
Keeley	Roy		KC4IMC	10675 Salt Air Road	Theodore	AL	36582	(205)973-2516
Keller	Eb			2984 Fallwood Lane	San Jose	CA	95132	(408)263-6229
Kincaid	Nilan		W6EIG	5529 W. 140th Street	Hawthorne	CA	90250	(213)643-5269
Kraus	Howard		K2UD	372 Callodine Avenue	Amherst	NY	14226-2971	(716)838-2406
LaGrua	Michael			Box 549	Caspran	MI	49915-0549	
Layer	Hal		N6SPD	PO Box 27676	San Francisco	CA	94127	(415)661-6958
Lee	Mitchell	MEL	KB6FPW	172 North 24th Street	San Jose	CA	95116	(408)298-3026
Leonardelli	John		VE3IPS	Box 722, Station A	Downsview (Canada)	ONT	M3M3A9	(416)636-3300
Lingwall	John			PO 70, 1025 Trinidad	Calhan	CO	80808	

Lord	Fred	3 GOATS	KB7GRB	10030 N.W. Cornell	Portland	OR	97229	
Mallory	Mark	MPM, D, U	WB7CAK	5196 Cobblecreek Road #7K	Salt Lake City	UT	84117	
Manley	Dean		KH6B	2058 Ainaola Drive	Hilo	HI	96720-3638	(808)959-8257
Marshall	Dave			440 Larry Drive	Florissant	MO	63033	
Martin	Steve		NK3R	141 Bridgecreek Drive	Goose Creek	SC	29445	(803)797-3143
Mawhinney	Scott	T (dashes)		295 Pettis Avenue	Mountain View	CA	94041	(415)960-1041
Maxwell	James		W6CF	PO Box 473	Redwood Estates	CA	95044	(408)353-2094
McGreevy	Steve	RR, ER	N6NKS	45 Elda Drive	San Rafael	CA	94903	(415)479-4259
Mideke	Mike	Z2	WB6EER	Box 123	San Simeon	CA	93452-0123	
Morgan	Robert			2817 West St. Anne	Rapid City	SD	57702	
Mozzochi	C.J.			PO 60	S. Glastonbury	CT	06073	
Mussler	Mike			Bonanza Star Route	Nederland	CO	80466	
Nickerson	Rick	R	KB6JQU	3224 Saxonville Way	Sacramento	CA	95842	(916)348-1466
Norman	Charles			4938 Spirit Court	Stone Mountain	GA	30087	
Olson	Keith	7FS	W7FS	E. 15470 Highway 106	Belfair	WA	98528	(206)275-2560
Osterud	Jim			519 Capri Circle	Tooele	UT	84074	
Otacilio P. de Sousa	José			Rua Calisto 62, Recanto dos Vinhais	São Luis, MA, Brasil PR8BNP		65070	
Owens	James	Q	NWØØ	1363 Tipperary	Boulder	CO	80303	
Palermo	George			1444 First Street, Suite A	Sarasota	FL	34236	(813)365-7777
Paschal	Ev			Sinclair Island	Anacortes	WA	98221	
Pepe	Bill		WA2TDR	Box 1915	Bloomfield	NJ	07003	
Peterson	Art			851 31st Street	Richmond	CA	94804	(415)234-2014
Phillips	Ed	IZJ	W6IZJ	408 North Alabama Street	San Gabriel	CA	91775	(818)285-8308
Pomplun	Don		K2BIO	521 Van Buren Place	San Ramon	CA	94583	(415)829-7648
Post	Kendall			1842 Hoffman Street	Madison	WI	53704	(608)244-0500
Raney	David	CAT	WC8E	4128 Linden Avenue	Cincinnati	OH	45236	(513)791-0740
Rappold	Sam	ZYK	WB6ZYK	PO 1267/479 Briceland Road	Redway	CA	95560	
Ratzlaff	Steve	SR	AA7U	295 Pettis Ave.	Mountain View	CA	94041	(415)965-7623
Rausch	Bill		AA6PA	820 Warren Way	Palo Alto	CA	94303-3627	(415)327-4662
Raven	Gregory	TEXAS	KF5N	4550 Sunnybank Court	Fort Worth	TX	76137	(817)485-6771
Reid	Frank		W9MKV	Box 5283	Bloomington	IN	47407-5283	
Remington	Sheldon	HO	NI6E	PO Box 2094	Pahoa	HI	96778	(808)966-6946
Roberts	Todd	ABC	WD4NGG	PO Box 21413	Hilton Head Island	SC	29925	(803)681-8114
Schick	D.H.			580 N. Buena Vista Dr.	Lake Alfred	FL	33850	
Schilke	John		AH8AC	184 Harding Blvd.	Oregon City	OR	97045	(503)656-9216
Seabury	Tom			PO 535	Diablo	CO	94528	
Seamons	John	JKS	KF6VO	95 Holstein Road	San Anselmo	CA	94960	(415)456-6090
Seden	Randy	ELU, U	WD6ELU	1272 Harold Avenue	Simi Valley	CA	93065	(805)583-5687
Skillin	Boyd	MGX	K6MGX	3876 East Pico	Fresno	CA	93726	(209)222-0275
Smith	Randy			19515 Frederick Rd. #135	Germantown	MD	20874	
Snow	John		N6AMZ	3708 Judah Street	San Francisco	CA	94122-1227	
Spaulding	Fred		K1YQP	883 San Simeon Drive	Mountain View	CA	94043	(415)961-5018
Spencer	Chris	FAW	WB7FAW	722 West 1850th North	Orem	UT	84057	(801)225-7852
St. Angelo	Michael		N2MS	61-16 80th Avenue	Glendale	NY	11385	
Statom	Mike			7401 MUNSS Box 45	APO NY	NY	09670	(818)289-7170
Stewart	Don			2617 Anza Street	Bakersfield	CA	93305-3109	(805)871-7024
Stinson	Dave	R	AB5S/7	HCR 65, Box 71053	Pahrump	NV	89041	(702)727-4370
Strong	David			4231 E. Grove Street	Phoenix	AZ	85040	
Sullivan	John			2069 Touraine Lane	Half Moon Bay	CA	94019	
Taylor	Bill			327 Camino Del Campo	Redondo Beach	CA	90277	(213)378-5628
Thompson	Arliss	XU	W7XU	Route 1, Box 52	Colton	SD	57018	(605)446-3687
Tracy	John		WB7AMC	10431 Miller Ave.	Cupertino	CA	95014	(408)257-9585
Trinkaus	George			4326 S.E. Woodstock, #489	Portland	OR	97206	
Turner	Clint	CT	KA7OEI	145 West Street	Pleasant Gap	PA	16823	(814)359-2663
Vanderbeek	Herb	G4	WY6G	630 Ashton Avenue	Palo Alto	CA	94306	(415)493-1726
Vandermaaten	Jim	SM	WB6QZL	1276 Tourney Drive	San Jose	CA	95131	(408)258-6872
Waldsmith	Gary	SUK	K4SUK	1441 Hound Hollow Road	Pilot Hill	CA	95664	(916)933-3815
Weiss	Jim		W9ZMV	c/o Radio WTAQ	LaGrange	IL	60525	(312)579-9104
Welch	James		KK6N	3071 Mauricia Avenue	Santa Clara	CA	95051	
Wilson	Rex	TI	KB7TI	4550 Vernetti Lane	Kingman	AZ	86401	(602)757-3649
Wisniewski	Wit			1421 N. Sarnoff Drive	Tucson	AZ	85715	(602)721-8412
Wright	Rick	1SUN	KA5YWH	Box 4181, Station A, SEOSU	Durant	OK	74701	(405)924-3699
Wu	Milt			Box 308	Columbus	NM	88029	(505)531-2565
Wyatt	Frank		N6FW	855 Ticonderoga Drive	Sunnyvale	CA	94087	(408)737-8155
Zenick	Ray		K6RRP	444 S. Nardo Avenue	Solana Beach	CA	92075	(619)481-8469